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## **Performance measurement in SMEs: literature review and results from a German case study**

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**Abstract:** A literature review of Performance Measurement Systems (PMS) in Small- and Medium-sized Enterprises (SMEs) shows that the main contributions focus on the development of theoretical models, but not on guidelines for practical implementation. In this context, an important neglected aspect is the general fitness or readiness of a SME to implement a PMS. Therefore, the aim of this paper is to determine critical prerequisites for a successful PMS implementation in SMEs. For this purpose, a case study in a German SME was conducted. The findings indicate that the existence of specific contingency factors – Corporate Strategy, software-based Enterprise Resource Planning (ERP) and Activity Based Costing (ABC) – strongly supports the successful implementation of a PMS and its later use. Hence, further research shall include these prerequisites as new variables determining the PMS process. Based on that, researchers and managers of SMEs can develop individual indicators to identify their own PMS readiness.

**Keywords:** management of small- and medium-sized enterprises; performance measurement; Activity Based Costing; ABC; Enterprise Resource Planning; ERP; contingency factors.

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## 1 Introduction

The introduction of Performance Measurement Systems (PMSs) in Small- and Medium-Sized Enterprises (SMEs) is still a field in which little research has been conducted yet. For the past 30 years, these both areas of research have already separately been looked into by scholars, which are now being acknowledged by the numerous publications, especially within the area of performance measurement (Neely, 1999). Until now, empirical and theoretical studies in performance measurement in SMEs have not been known very well, which can be noted in the lack of publications when comparing both individual topics on their own (Garengo *et al.*, 2005).

As a result of the changes in management research that began in the 1980s, the importance of adapted and new measures for PMS has been growing. This development is mainly based on the critics of the previously used target and finance-orientated indicators. Owing to this recognition, more developments of PMSs could be seen in the end of the 1980s and the 1990s – which together give a balanced, multidimensional perception of the company. And so, the knowledge of managers has increased such that performance management systems now deliver valuable information, which serves as the basis for decisions in corporate management. Nevertheless, further studies highlight that there is still a gap between this knowledge and its use in practice (Garengo *et al.*, 2005; Evans, 2004; Smith and Smith, 2006). This could be due to the fact that a development process and not an adaptation process is needed for PMSs. Bititci *et al.* (1999) formulated the additional criticism that the involved managers know what needs to be measured at the end of the management process, but the question remains open as to how this system can be successfully implemented.

It is articulated in numerous articles that most of the systems are developed for affiliated groups and large companies (Hudson *et al.*, 2001; Garengo *et al.*, 2005). Keeping in mind the often cited experience that SMEs are not smaller versions of large companies (Storey, 1994; Welsh and White, 1981; Penrose, 1959), it can be assumed that the diffusion of PMS within this group is far lower than in large companies (Garengo *et al.*, 2005) owing to the combinations found when special characteristics of the SMEs encounter requirements of the developments, implementation, usage, and adoption of a

PMS. In recent years, it has become more apparent that the complexity increases in manufacturing SMEs, which requires a different management culture and rationalisation (Bernardi and Biazzo, 2003; Marchini, 1995; Martins and Salerno, 1999).

Based on the Balanced Scorecard (BSC), Kaplan and Norton (2001b) postulate that a sustainable BSC programme must be a transformation process and not a metrics project. This transformation process unfolds its value within large companies through the effect of successful implementation; but within SMEs, it starts during the implementation itself. However, a successful development and implementation process needs to be enforced for this change to take place. Bourne *et al.* (1999; 2000) identified in two studies that an IT system, for example, is an important factor whether an implementation process runs successfully or not. This knowledge combined with practical experience led to the question whether there are factors that are needed to meet the requirements so that the start of an implementation process is logical at all. In other words, there are basic requirements that enable companies to efficiently complete the development process. Taking the significance to SMEs into special consideration, for which successful implementation is more important than it is for large companies owing to the high need of resources, one of the findings has been quoted in an article by Garengo *et al.* (2005, p.41):

“Given the three stages that literature defines as characteristic of the implementation of a performance measurement system (design, implement and use: Bourne *et al.*, 2000), what are the key contingency factors that influence the design, implementation and use of PMS in SMEs? What are the relationships between the contingency factors of PMSs and the performance measurement practices in small and medium companies?”

Using a practical example, the following article tries to answer what fundamental factors influence the implementation process of SMEs and whether these prerequisites are adequately appreciated by the postulated process from Bourne (2000). As successful implementation is particularly important for SMEs, the characteristics of SMEs should also be confronted with the different stages of the implementation process in order to identify difficulties and their solutions.

As a result, the theoretically required process from Bourne (2000), which globally consists of the three stages, needs to be extended by a preceding stage in which it is verified whether a company – as regards its structure – is ready for an implementation process yet.

Overall, the objective of this paper is to raise the awareness that not all companies, especially SMEs, can develop and implement a performance measurement system following the traditional process. It is rather necessary for those companies to consult an external person or organisation in a preceding stage in order to check the corporate ability for a successful implementation and later use.

To answer these questions, the article is structured in three parts. In the first step, the existing literature is analysed. Here, it is the implementation process in particular, as well as the specific characteristics of SMEs that are investigated. In the next stage, they are compared to each other and areas of conflict are highlighted. Using the final case study, the theoretical knowledge is backed by a practical example. Results and implications are shown in the last chapter.

## 2 Background and literature review

During the preparation and development of the case study-based project, academic papers were studied in order to integrate the current status of research and to enable the derivation of own research.

Neely *et al.* (2005, p.1231) give a very accurate status of the current literature by stating:

“One of the problems with the performance measurement literature is that it is diverse. This means that individual authors have tended to focus on different aspects of performance measurement system design.”

For this article, mainly papers that cover design, implementation, use and diffusion of performance management systems have been examined, focusing on approaches which have been developed to meet the needs of SMEs in the manufacturing industry. This focus was taken in order to balance the theoretical industry-specific particularities with the knowledge from practical experience.

When looking for literature in both performance management and SME separately, there is already a large number of publications in each area. Focusing the search on a direct combination of PMSs for SMEs, only six results are found in the two most significant journal databases. If the search is rather based on literature indices that correspond to the publications of Bourne (2000), Garengo *et al.* (2005), and others, and is extended to congress papers, the publications then amount to less than 50 within the past ten years. This is only a small margin in comparison to each of the two individual areas that have been published separately.<sup>1</sup>

Hence, research on PMSs for SMEs has rarely been conducted yet.

A large proportion of publications concentrate on an approach or a process, which has been implemented in a particular number of companies mostly with the guidance of the corresponding author. Another area covered in publications is the analysis of a selected number of PMSs, based on defined criteria that are implemented more or less frequently (Garengo *et al.*, 2005; Hudson *et al.*, 2001). No article has been found that focuses on the structural conditions of companies in one form or another, which could be used as a starting point for the implementation of PMSs. However, the majority of the approaches accentuate that emphasis must be put on the individual company features as regards design and implementation. Therefore, the theoretical approach always formed the basis of practical application. Since structural characteristics are not incorporated in any approach as a special parameter, the phenomenon of the structural faintness has only occurred as a side effect of the implementation process so far. In the context of the examined papers, the authors were mainly supporters of the implementation process in contrast to the authors of this article who had a direct connection with the client.

Particular attention was paid to works that cover the following three central aspects:

- 1 theoretical research papers with the focus on design and implementation of PMSs
- 2 PMSs for SMEs
- 3 studies related to practical diffusion of PMSs in SMEs.

The publications of the first group cover theoretical aspects from performance management systems including:

- Principles and perspectives of PMSs (Kaplan and Norton, 1992)
- PMSs for particular industries (Maskell, 1989)
- Principles for the design of a PMS (Maskell, 1989)
- Determination of performance criteria (Globerson, 1985)
- Suggestions to the aspects of PMSs, which should find significance within the design process (Neely *et al.*, 2005)
- Implementation process (Sharman, 1995).

Table 1 gives an overview of articles on that topic that have been published so far, showing the increase in practical orientation from left to right. Column 1 contains papers that solely cover theoretical works for PMSs and the implementation process. Column 2 exclusively includes papers that focus on SMEs. On this basis, the theoretical aspects are analysed as well as the devised case study, which is given as a practical example. Articles from Column 3 concentrate on works that contain the observation of systems or their aspects in practice.

**Table 1** Literature review

<i>Development + implementation of PMSs</i>	<i>PMSs for SMEs</i>	<i>Practical research of PMSs in SMEs</i>
Kaplan and Norton (1992), The balanced scorecard – measures that drive performance	Laitinen (1996), A dynamic performance measurement system: evidence from small Finnish technology companies	Cagliano <i>et al.</i> (2001), Small firms under micro scope international differences in production/operations management practices and performance
Maskell (1989), Performance measures of world class manufacturing	Hudson <i>et al.</i> (2001), Theory and practice in SME performance measurement systems	Collis and Jarvis (2002), Financial information and the management of small private companies
Neely <i>et al.</i> (2005), Performance Measurement System Design: a literature review and research agenda	Garengo <i>et al.</i> (2005), Performance measurement systems in SMEs: a review for a research agenda	Rantanen and Holtari (2000), Performance analysis in Finish SME
Globerson (1985), Issues in developing a performance criteria system for an organisation	Bourne <i>et al.</i> (1999), Performance measurement system design: testing a process approach in manufacturing companies	Gumbus and Lussier (2006), Entrepreneurs use a balanced scorecard to translate strategy into performance measures
Bourne <i>et al.</i> (2000), Designing, implementation and updating performance measurement systems	Chennell <i>et al.</i> (2000), OPM: a system for organisational performance measurement	
Neely <i>et al.</i> (1997), Designing performance measures: a structured approach	Tenhunen <i>et al.</i> (2001), SME-oriented implementation of a performance measurement system	
Sharman (1995), How to implement performance measurement in your organisation		

In this context, one of the most significant PMS frameworks for SMEs was developed by Laitinen (2002). The corresponding article is based on the important dimensions stated in other research papers, but at the same time, it includes the characteristics of SMEs and considers the preconditions by focussing on an Activity Based Costing (ABC) system.

Bourne *et al.* (1999) highlight, by means of proving their applied study, that the process itself and not its support contributed to the success of their study. This concept can only be followed conditionally insofar as the approach and the implementation process are the central variables. In particular, when relating to SMEs, it needs to be stated from one's own experience that the risk of failure would be higher without external monitoring. Bourne *et al.* (1999) foster this statement by writing that some supporting skills like general technicalities and awareness are necessary for this specific approach. One of these cognitions from the study by Bourne *et al.* (1999) is that the company size (measured by the number of employees) does not play a decisive role for the success of this process. It may be the case that this cognition is an isolated view. However, it is becoming increasingly popular to specify a company's growth and its complex structure by the number of its employees (Garengo *et al.*, 2005). Combining the previously mentioned aspect with the characteristics of SMEs, which barely have any formalised structures such as strategy, processes, etc., leaves this cognition to be scientifically investigated in particular. Conclusively, it can be said that there have been no approaches to date that are especially developed for SMEs and are widely accepted – neither the approach by Laitinen (2002) nor by Chennell *et al.* (2000). Furthermore, it needs to be stated that the general characteristics of SMEs such as owner focusing, high flexibility, fast fit to market changes, less process formalisation, focussing on daily business and finally learning-by-doing process (Jennings and Beaver, 1997; Marchini, 1995; Martins and Salerno, 1999) were taken into consideration. However, structural assumptions such as the existence of an appropriate formal process landscape, an Enterprise Resource Planning (ERP) system, or an ABC system were not included.

The third group of articles covers practical experience with PMSs. It needs to be stated that in general, no long-term study exists that entirely analyses the success of PMSs in SMEs. All examined articles are a snap-shot of the particular aspects of PMSs in practice. In the investigated studies, the study period ends after the implementation phase and is only selectively regarded within the 'Update' phase.

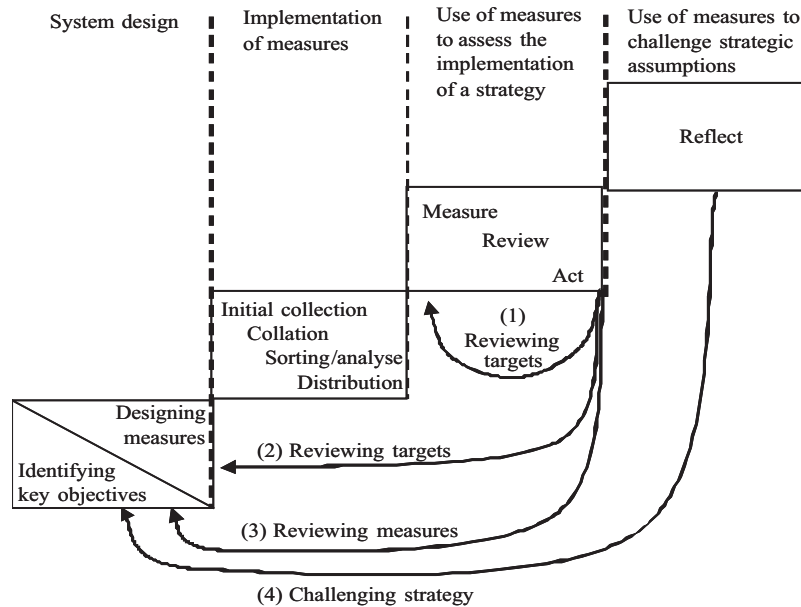
To conclude the literature review, it can be stated that the methodological and instrumental theory is already very well developed. A large number of literature exists as regards the development process (design, implementation, use), but with contradicting approaches (Neely *et al.*, 2005). Scholar papers on PMSs in SMEs are relatively rare; especially those that transcend the general state of research of PMSs and SMEs.

### **3 View on the PMS implementation process**

In general, certain phases for the development of a performance measurement system must be considered. These individual steps are shown in Figure 1.

**Figure 1** Development phases of a performance measurement system

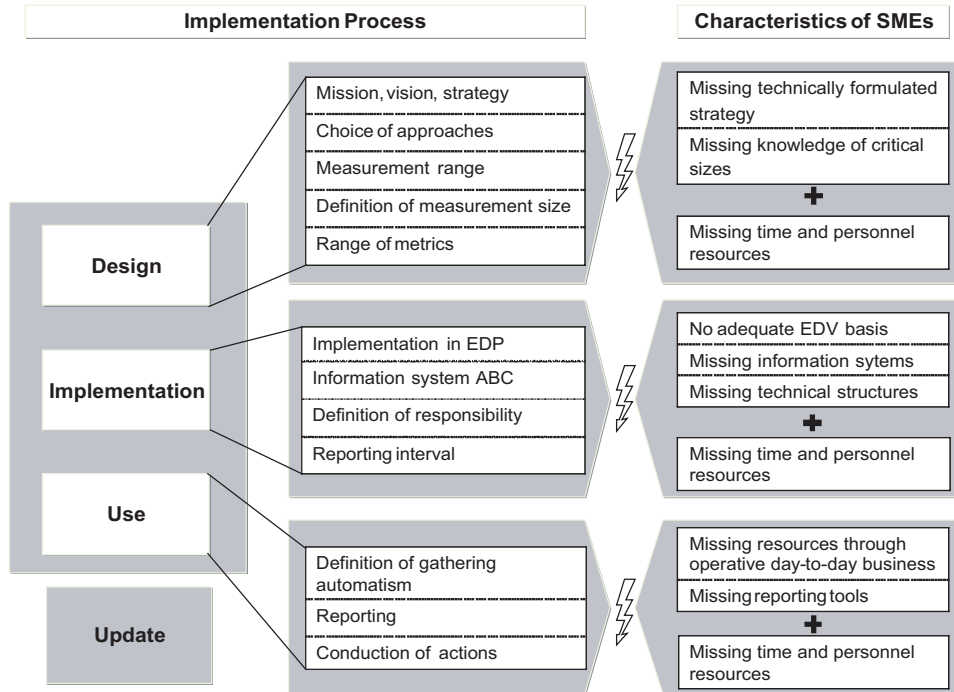
Source: Bourne (2000)



However, Sharma *et al.* (2005) postulate that it is important to begin with identifying the present practices of SMEs for performance measurement and their requirements together with other individual factors before developing a generic performance measure for SMEs. The authors agree with these findings but identified a further requirement, the so-called structural preconditions. For SMEs, the process from Bourne (2000) is therefore flanked between two problem areas that are partially linked with each other. In our view, the first problem area is the missing preceding process stage, *i.e.*, to check whether the conditions allow an implementation process to be enforced successfully. This stage within the development process should be ideally conducted by external partners to ensure a more objective view.

The characteristics of a SME determine the second problem area. If no analyses and checks are made before the beginning of the implementation process, the weaknesses, which originate from the specific SME characteristics as regards the requirements of a performance measurement system (Figure 2), are noticed during implementation at the latest. This is a critical point: if the implementation fails at the end of the project, this has a much higher impact on SMEs than on large companies because of the high need and obligation of resources for the whole PMS implementation process (Garengo *et al.*, 2005).

**Figure 2** Conflicts of the implementation process with specific SME characteristics



One result of the studies conducted by Bourne *et al.* (1999) shows that companies within their researched group, whose members have been deflected through other apparent circumstances, have either implemented the system incompletely or not at all. This result speaks for an incremental implementation in contrast to the step-by-step project approach.

Moreover, Bourne *et al.* (1999) state that all companies, who have reached a high level of implementation or already completed it, have been privately owned. Hence, these companies are supposed to be more successful in PMS implementation than other ones.

## 4 Case study

### 4.1 Methodology and case description

The case study is based on a consulting project that included extensive corporate documentation analyses and interviews with managers of different departments. For this, 14 qualitative guided expert interviews were conducted (Witzel, 2000), following the action research approach (Susman and Evered, 1978). The analysis and evaluation of this research is the basis for the following case study (Yin, 1981).

To document the knowledge of the previous chapter for the case study by practical experience, the individual stages of the implementation process are considered, even though not in detail. They will then be compared to the difficulties that can be derived from the SME characteristics.

The company in this case study is categorised as a medium-sized company following the definition of the European Commission (Table 2). It has around 100 employees and achieved a turnover of approximately 13 million € in 2006. The company, which was founded in 1991, is still managed by the founding family. As a family-run company, internationally oriented through worldwide branches and distributors, the company offers a wide range of special plastic and metal accessories.

**Table 2** Classification of SME to EU standard 2003/361/EC

<i>Enterprise class</i>	<i>Employees</i>		<i>Revenue</i>		<i>Balance sheet total</i>	
Micro companies	0	9	2 m. €	(n. def.)	< 2 m. €	(n. def.)
Small enterprises	10	49	< 10 m. €	(7 m. €)	< 10 m. €	(5 m. €)
Medium-sized enterprises	49	249	< 50 m. €	(40 m. €)	< 43 m. €	(27 m. €)

## 4.2 The PMS introduction

### 4.2.1 Starting point

For the authors, the project began in 2004 by writing a business plan as the basis for the following business expansion. Despite its presence on the market for 12 years and its formal structures, the company was on the cusp of changing from a start-up into a developed SME. While the business plan was prepared, the knowledge in the management team of how to develop a company strategy was growing. This strategy was developed by another external consultancy earlier. Although the concept was scientifically postulated (Garengo *et al.*, 2005; Globerson, 1985), limits were met in the first strategy formulation. Though it was formulated under the participation of selected employees, it could not be communicated to the staff as a comprehensible and perceivable strategy. There was a gap between the strategic (company leaders) and the operational level (workers), although the boundaries in the SMEs are not as defined as in a large company.

Based on these strategic measurements, evaluation objects were furthermore defined which opened out in over 100 codes, but never came into operation. For this reason, a combination was introduced, which is derived from Figure 3. There was a gap that resulted from the requirements of the performance measurement system and its characteristics. Additionally, it was the case that no technical project was set up as regards the design and implementation of a PMS.

As regards its structure, it must also be stated that the company was not mature to ensure a project like this to be successful. However, in some areas within the company, some data were collected that were only allowed to be accessed by the management of the operative manufacturing process. Furthermore, they were by no way derived from the company strategy. Moreover, there was no process that was formally defined at all, there was no process-based cost accounting system and the Electronic Data Processing (EDP) infrastructure consisted of isolated applications constructed for operational business.

For these reasons, each implementation project was likely to have failed after the theoretical publication. The concept for the company development was derived from the strategy focused on particular milestones, which were supposed to abolish the difficulties mentioned above.

As the management is always the link between the operating day-to-day business and the accomplishment of the strategic company development, it was decided that the implementation should be set up as a project that runs parallel to company development. The decision to make the project management an external responsibility hence encounters a failure risk because the top management is not distracted during the design and implementation phase, which is deflected through ulterior activities (Bourne, 2000). It is noticeable, through the proceedings of the company development running parallel to the implementation of a performance measurement system, that the decision has proved to be correct.

#### *4.2.2 Corporate strategy*

In order to make the company strategy comprehensible for the employees and to link the level of operation with the strategic level, it was necessary to make it easy to communicate. This does not only mean ensuring that it is understood by the employees, but also being able to assist with their realisation.

From the company development, a strategy can be derived which is based on two pillars. The first one relies on the continuous growth of the previous years to be maintained, which was supposed to be achieved by formulating the dimensions of turnover and profit growth, as well as further objectives such as geographical expansion and the development of new business areas. The second pillar should establish the company name as a brand, with emotional charge to become technology leader.

Measures could partially be taken from the first failed strategy workshop. Within the scope of operationalisation, it was confirmed during one of the workshops that the proposed characteristics cannot be collected from the existing data landscape. And so, it was agreed that the implementation project is to be incrementally designed, with the measures becoming operationalised as regards each different stage. The 'use' phase should then follow the completion of restructuring.

#### *4.2.3 Overall process reengineering and documentation*

The performance of an organisation completely depends on the performance of its processes (Sharman, 1995). Processes play a key role within the efficient design of procedures and thus the control of companies. As was often stated in the literature, it is a central attribute of SMEs that there are no formalised and, above all, documented process sequences (Garengo *et al.*, 2005; Jennings and Beaver, 1997; Marchini, 1995; Martins and Salerno, 1999). This phenomenon is mainly observed in organically grown companies because it either plays no role or just a minor one in the earlier stages of the company development processes. This phenomenon makes the implementation of PMSs in SMEs difficult, if not impossible, because important instruments for the data extraction and also for controlling reasons are missing, for example ERP systems or an ABC system.

The company of the case study revealed such problems. With the company having grown organically, the flow of information was of informal nature in many areas and therefore the documentation was deficient and not based on a formal process sequence.

For this reason, comprehensive process definitions and affiliations such as restructuring were implemented in all areas. This was also the requirement for the implementation of an ERP and an ABC. Additionally, it allows a collection of measurements within the production process of goods and services for all divisions.

An important milestone was the restructuring of the manufacturing and logistics area. They demonstrate a central area of the supply chain and deliver a high number of operative performance data of the operative business, which is particularly relevant for the company expansion, whether it concerns geographical dimensions or the product. Additionally, this area delivers the key data for the critical dimensions of performance, namely quality, time and flexibility (Hudson *et al.*, 2001). As executed by Leong *et al.* (1990), these dimensions are particularly relevant for manufacturing companies. Since the stock holds a key position, the strategy assignment was discussed with the responsible department leaders as well as the workers in order to define adequate measurements. Through cooperation with the company leaders, the objectives to be achieved were defined.

#### 4.2.4 Customer-focused market research accomplishment

An important criterion that is mentioned in many academic papers regarding the PMS topic is the inclusion of external figures of the corporate environment (Keegan *et al.*, 1989; Bhimani, 1994; Henri, 2006; Ittner and Larcker, 1998). The customers, for instance, can be seen as one of the important stakeholder groups. Appiah-Adu and Singh (1998), and Deshpande *et al.* (1993) provide evidence that customer orientation and corporate performance are positively related. According to Pelham and Wilson (1996), this positive connection between market orientation (customers and competitors) and performance also applies to SMEs. This finding is even more conclusive when compared with the fundamental differences of larger companies, namely, the external uncertainty of the competitive environment (Storey, 1994; Welsh and White, 1981).

An important milestone within the scope of the Corporate Development Program was the realisation of a customer analysis to answer the question of how the company is perceived by its customers in order to draw conclusions on the degree of customer satisfaction since the customers with their different desires are the focus of any company (Appiah-Adu and Singh, 1998). Hence, they can be viewed as another critical dimension of performance (Hudson *et al.*, 2001). Moreover, customer satisfaction is one of the ratios that are important for both pillars of strategy.

This kind of data collection is very resource-intensive, not only in terms of personnel, but also finance. It should be added that most of the SMEs do not have the conceptual Know-how that enables them to conduct an efficient customer analysis (Fuller-Love, 2006). This is the reason why this part of the overall project was supported by external consultants in order to execute this first study and create a concept to internalise this investigation in the future.

A vital finding of this investigation was that the customer awareness of the company was misjudged by the management board. Despite its large R&D investments, the company was still viewed as a commodity supplier by the better part of its customers.

By means of several academic sources (Voss *et al.*, 1992a; Voss *et al.*, 1992b; Voss *et al.*, 1992c; Voss *et al.*, 1993; Daniel and Reitsperger, 1991; Darlington *et al.*, 1992), the following four dimensions of innovation can be identified:

- 1 product innovation
- 2 product development
- 3 technology acquisition
- 4 process innovation.

The company management decided to focus especially on the first three dimensions in order to realise the corporate objective of enhancing the brand with the dimension of a top position within the technology sector.

#### 4.2.5 Implementing an ERP

Kueng *et al.* (2000) define a PMS as an IT system that gathers performance-relevant data from various sources, compares the current values against historical and target values, and communicates the results to the actors.

Moreover, the absence of affordable software platforms that focus on the specific needs of SMEs further obstructs the introduction of PMSs in these companies (Bititci *et al.*, 2002). Several researchers argue that computer systems play an important role for a successful implementation of a PMS (Bourne *et al.*, 1999; Laitinen, 2002). A study conducted by Bourne *et al.* (1999) proved that companies that had insufficient EDP systems did not complete the implementation phase successfully.

An EDP system structured by isolated applications is somewhat inappropriate to manage performance processes and to systematically collect data within the whole company. This is the reason why the realisation of an ERP software was a prerequisite for efficient reporting. This software was not only supposed to represent all corporate departments, but also to allow and support a systematic data analysis.

A central aspect for SMEs is cost-effective and human-resource-saving data collection. Here, special evaluation models have been integrated, which allow a multidimensional data modelling approach.

Since the implementation of an ERP is a very complex project *per se* and proceeded by a tedious selection process, this part of the project was outsourced to a team of external consultants.

#### 4.2.6 Implementing an activity-based costing approach

Resulting from the criticism of the traditional Management Accounting, Cooper (1988a; 1988b; 1989a; 1989b) developed the ABC approach.

Even if financial ratios are often criticised, they are, in particular, very important for SMEs as limited financial resources are not only a central characteristic but also a latent risk (Garengo *et al.*, 2005).

An efficient cost accounting system is of vital importance for the corporate management and for several PM approaches such as the Integrated Performance Measurement System (IPMS) approach of Laitinen (2002). Still, the existence of cost accounting within SMEs cannot be taken for granted.

The main idea of the ABC is to directly measure the cost of resources (production factors) used to perform organisational activities and to link the activity costs to outputs such as products, services, customers and projects. Laitinen (2002) states that the three variables (production factors or resources, actions, and products) are directly linked to the

ABC system. Hence, such a system does not only play a central role within the PMS as an independent information system about the financial situation of a company, but also as an endpoint of non-financial performance processes that are characterised through financial figures (Sharman, 1993).

The aforementioned definition and documentation of formal processes has been named as a prerequisite of the ABC implementation. This central part of the project was also managed and accomplished by external consultants.

4.2.7 Current steps and outlook

Researchers argue that the implementation of indicators and the measurement of individual performance cannot be seen as a PMS since the measurement is only one part of the whole system (Bourne, 2000). The more important part is the conversion of the results of the measurement into implied activities.

Currently, there is the challenge of automating the data collection as a central part of the process step ‘Use’. It should become a routine to regularly collect data as well as actively report it and identify relevant activities.

Here, the characteristics play an important role again, e.g., a high utilisation within the operational business, with personal and temporal resources being vital. For this reason, several reporting intervals were assigned to the case study company. Again, the operational business and the data that is easily accessible are in the main focus (Figure 3). Melnyk *et al.* (2002) state that operational figures are often neglected.

Figure 3 Reporting schedule

Weekly	Monthly	Semi-annually	Annually
<ul style="list-style-type: none"> <li>• Production</li> <li>• Storage</li> <li>• etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Finance</li> <li>• Procurement</li> <li>• etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Development status of R&amp;D projects</li> </ul>	<ul style="list-style-type: none"> <li>• Customer surveys</li> </ul>

The case proves that structural premises call for much more attention in the implementation process. Without the creation of the structural preconditions, the company would not have been able to implement a PMS of that quality nor continue its growth.

5 Discussion and further research

The obtained findings resulted in two directions of research:

- 1 There is a lack between the formal requirements of PMSs and the existent occurrence, especially in the field of SMEs.
- 2 Problems arise within the scope of the implementation owing to deficient appraisal of the established characteristics of SMEs and lack of structural preparation.

On the basis of the used literature, it was discovered that PMSs, as well as their design and requirements, are a sound area of the existing theoretical research. The aspects that are subsumed under the structural prerequisites in this article can be found in miscellaneous research papers. However, the aspects are summarised individually, context-related or not in any particular structure. As the problem of dissatisfying structures mainly affects SMEs, researchers should try to raise the awareness of this approach within the companies.

Some approaches that have been developed for SMEs such as the IPMS from Laitinen (2002) do in fact proclaim the close connection of PMS and ABC, but an ABC is only one precondition. The following can be seen as a selected set of basic, but important internal preconditions:

- strategy formulation based on the corporate size
- creation of an applicable and formal processing landscape
- implementation of a suitable ERP
- implementation of an ABC.

In addition, there is the external perspective in terms of a customer structure analysis. Several analyses of all important stakeholders would be needed to get an extensive view of the corporate environment.

At this point, the limits resulting from the SME characteristics become visible again as the limited resources must be kept in mind within all activities. Regarding external data collection, this pertains especially to financial resources. By creating structural preconditions, some of the SME limits can be abolished, *e.g.*, missing formal structures or the lack of knowledge on important indicators.

On this account and in close collaboration with practical applications, the theoretical research should expand the former list of preconditions and define a list or matrix of criteria, which companies should use to estimate their own readiness for the implementation process. Based on the theoretical and practical findings of this project, scholars and researchers should provide a theoretical basis for a company check of readiness for a PMS implementation. Therefore, managers need a special decision basis (*e.g.*, checklist) with criteria introduced in this paper to define their actual *status quo*. The importance of practical findings was shown by this project, as managers cannot easily define the readiness of their enterprises for a PMS. So, before an implementation project can be started, the conformance of the requirements from PMSs with the individual characteristics of the SME is necessary, in the best case by means of a structured checklist. An important factor for the final success is an adequate schedule to consider the limitations in resources in SMEs.

In addition, there is a strong need for long-term studies about the usage and the influence of PMSs on the corporate success in order to determine the effectiveness of the systems. Last but not least, more research should also be conducted to verify the results of this article upon a larger scale of practical examples.

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## Note

- 1 Source of literature: bibliographies of appropriate publications as well as databases of journals such as [www.ebscohost.com](http://www.ebscohost.com) and [www.emeraldinsight.com](http://www.emeraldinsight.com).